

CLAIMS:

1. An optical switch comprising:
  - a collimator array with a plurality of collimators coupled to optical fibers;
  - a mirror array with a plurality of movable mirrors having optically coupled thereto a light leaving a first collimator of said collimator array;
  - a first mirror having optically coupled thereto the light leaving said mirror of said mirror array;
  - a second mirror having optically coupled thereto the light leaving said first mirror; and
  - a second collimator of said collimator array, said collimator having the light from said second mirror coupled thereto,wherein the light leaving said second mirror passes the said first mirror and said mirror array and optically couples to said second collimator.
2. An optical switch comprising:
  - an input unit with a plurality of optical emitters coupled to optical fibers;
  - a mirror array with a plurality of movable mirrors illuminated by a light emitted from said optical emitters;
  - a first mirror illuminated by the light leaving said mirrors of said mirror array;
  - a second mirror illuminated by the light leaving said first mirror; and

an output unit with a plurality of optical receivers coupled to optical fibers,

wherein the light leaving said second mirror passes said first mirror and said mirror array and illuminates an optical receiver selected in said output unit.

3. An optical switch according to Claim 1, wherein said first and second mirrors are fixed mirrors.

4. An optical switch comprising:

a collimator array with a plurality of collimators coupled to optical fibers;

a mirror array with a plurality of movable mirrors having optically coupled thereto a light leaving a first collimator of said collimator array;

a first mirror having optically coupled thereto the light leaving said mirror of said mirror array;

a second mirror having optically coupled thereto the light leaving said first mirror; and

a second collimator of said collimator array, said second collimator having the light from said second mirror coupled thereto,

wherein an optical path between said first mirror and said second mirror is preferably formed to include a region extending more on the fiber side of said collimators than the other side thereof where said collimators and said fibers are coupled in the

longitudinal direction of said collimators.

5. An optical switch according to Claim 4, wherein said mirror array and said first mirror are located more on the side of the collimators than the other side thereof where the collimators and said fibers are coupled in the longitudinal direction of said collimators.

6. An optical switch comprising:

a collimator array with a plurality of collimators coupled to optical fibers;

a mirror array with a plurality of movable mirrors having optically coupled thereto a light leaving a first collimator of said collimator array;

a first mirror having optically coupled thereto the light leaving said mirror of said mirror array;

a second mirror having optically coupled thereto the light leaving said first mirror; and

a second collimator of said collimator array, said collimator having the light from said second mirror coupled thereto,

wherein as viewed in a direction parallel with the direction of the optical path between the mirror array and the first mirror on the input side, the optical path between the first mirror and the second mirror is preferably formed in a position that the optical path laps over the collimator array.

7. An optical switch according to Claim 1,

wherein the optical path between said first mirror and said second mirror is formed longer than the optical path between said movable mirrors of said mirror array and said first mirror.

8. An optical switch according to Claim 1, further comprising a base and a first support member mounted on said base, wherein said collimator array and said mirror array are mounted on said first support member.

9. An optical switch according to Claim 1, wherein the number of arrays of collimators arranged in a direction parallel with the direction from the mirror array to the first mirror is smaller than the number of said collimators arranged in a direction at right angles to said direction.

10. An optical switch according to Claim 8, further comprising a second support member mounted on said base, wherein said second mirror is mounted to second support member, and wherein a plurality of connectors for externally applying voltages to said mirrors are installed in the base in a range between said first support member and said second support member.

11. A switch system comprising:  
a board;  
an optical switch coupled to optical fibers laid on said board outputs light input from a first optical fiber to a second optical fiber selected by

driving a movable mirror; and

a control IC for controlling a tilt of said movable mirror so that the input light is output to said second optical fiber,

wherein said optical switch comprises:

a collimator array with a plurality of collimators coupled to optical fibers;

a mirror array with a plurality of movable mirrors having optically coupled thereto a light leaving a first collimator coupled to said first optical fiber;

a first mirror having optically coupled thereto the light leaving said mirror of said mirror array;

a second mirror having optically coupled thereto the light leaving said first mirror; and

a second collimator of said collimator array, said collimator having the light from said second mirror coupled thereto,

wherein the light leaving said second mirror passes the said first mirror and said mirror array and optically couples to said second output collimator.

12. An optical switch comprising:

a first collimator array with a plurality of collimators coupled to optical fibers;

a mirror array with a plurality of movable mirrors having a light from a collimator of said collimator array;

a first mirror having optically coupled thereto light leaving a mirror of said mirror array; and

a collimator of said collimator array of a second collimator array with a plurality of collimators coupled to optical fibers, said collimator having coupled thereto the light leaving said first mirror,

wherein said mirror has a common electrode for driving said plurality of movable mirrors.